It is hardly necessary to remark that these instruments are capable of furnishing results of the highest value to solar physicists. We therefore note with satisfaction the still later Reuter telegram from Hammerfest, dated August 17:

> Sir George Baden-Powell's yacht *Otaria* has arrived here all well with the members of the British Eclipse Expedition. The party made excellent and valuable observations of the eclipse in Novaya Zemlya. The corona and spectrum were clearly visible, and very satisfactory photographs were taken.

The following telegrams from Russia inform us that one of the parties from Pulkowa, including the excellent spectroscopist Belopolsky, has also been successful.

> *St. Petersburg, August* 15.
>
> According to a telegram from Tiumen, in Western Siberia, the solar eclipse was very successfully observed at that place, and one particularly good photograph was taken. Some stars even are visible.
>
> *August* 16.
>
> A despatch from Khabarovka, which is the residence of the Governor-General of the maritime territory in the extreme east, states that the astronomical observations of the eclipse taken in the village of Orlovski, on the river Amur, were thoroughly successful. The weather was fine during the eclipse. The astronomers, MM. Belopolsky, Vitram, and Orbinsky, have returned to Khabarovka.
>
> *August* 18.
>
> A telegram from Khabarovka gives further details of the astronomical observations of the solar eclipse taken on the Amur. The sky at the time was overcast, but during totality the corona and several stars of the first magnitude were distinctly visible through the telescope. The darkness was not complete. Six photographs were taken illustrating the different phases of the eclipse.

We referred last week to the partial success on the west coast of Norway. Mr. John Dover has communicated a letter to Tuesday's *Times*, from which we make the following extract:—

> It was thought that the best view would be obtained from a village, Brevik, about twenty miles south-east of Bodö. Leaving Bodö on Saturday evening by steamboat, we passed through the "Saltström" at low tide, and waited near to watch [the waters rushing into the fiord as the tide rose. We then proceeded to the village of Brevik, where we landed at two o'clock on Sunday morning. A climb of about twenty minutes brought us to a suitable elevation above the fiord of about 250 feet from whence there was an uninterrupted view to the north-east and east for some miles. Only one small cloud was visible, and that in the west; otherwise the sky was quite clear. There was a perfect sunrise at 3.14 on Sunday morning. The partial eclipse began at 4.1 a.m. The total eclipse began at 4.54, and lasted for 92 secs. At Vadsö the totality would have been 105 secs. The partial eclipse ceased at 5.51. At 4° 54′ 45″, the middle of the eclipse, the sun being completely hidden, the corona around it assumed a distinct form. The corona to north-east was about the length of the sun's diameter and very distinct. On the western edge the corona was about two-thirds the length of the sun's diameter, while to the south-east it was about half a diameter. To the north the corona was very slight indeed, being about one-tenth of a diameter. On the south-western edge of the sun appeared a large red spot which was visible until the totality of the eclipse had quite ceased. A Dutch professor near me observed two small spots on the eastern side, but these escaped my notice. I glanced away from my telescope for a moment to see if any stars were visible, and observed Jupiter and Venus. Mercury and Regulus were also seen by others present. The colour of the moon in front of the sun seemed of a dull grey, while the corona around the sun was of a light cream colour. The sky to north and east appeared of a pale orange colour, while to the west it was of light yellow shade. Two photographers—one from Flensborg, Schleswig, the other an amateur from Oxford—were at work, so that I hope a good photograph of the eclipse may be produced. My great regret was that I did not see any one present with thoroughly good scientific instruments.

We shall publish next week a letter received from Mr. Norman Lockyer, containing an account of the preparations he made to observe the eclipse on the Island of Kiö, assisted by the officers and men of H.M.S. *Volage*. Sir Robert Ball contributes to Wednesday's *Times* a long letter on the observing parties and stations at Vadsö and in the neighbourhood, and Dr. Rambaut makes a similar contribution to the *Daily Chronicle* of the same day. We must also mention that the correspondent of the *Daily Telegraph* gives some interesting notes on the characteristics of the shadow.

NOTES.

THE current number of the *Comptes rendus* of the Paris Academy of Sciences contains a statement, by M. Berthelot, with reference to the present condition of the scheme to erect a monument to Lavoisier by international subscription. A Committee to take this matter in hand was formed, in 1894, of members of the Institute of France, and representatives of the French Government, of the Municipal Council of Paris, and of various scientific bodies. A special Committee was nominated to obtain subscriptions, and the result of their appeal has now been made known by the publication of a list of subscribers in a fasciculus issued with the *Comptes rendus*. The amount already received is 47,553 francs (nearly £2000), and subscriptions are still coming in. The Emperor of Russia has authorised the opening of a subscription list in Russia, and has headed the list with a sum of two thousand roubles (£313). The French Minister of Public Instruction will give six thousand francs (£240), and the City of Paris £400. Alsace has contributed 2475 francs (nearly £100) to the fund, Germany about £160, England £130, Austria-Hungary £100, Belgium £24, United States £20, Greece £7, Italy £40, Mexico £4, Netherlands £40, Portugal £24, Roumania £14, Servia £40, Norway and Sweden £80, Switzerland £34. The construction of the monument has been entrusted to M. Barrais.

A STRONG and representative Committee is being formed in connection with the proposal to inaugurate a memorial to commemorate the inception and extension of submarine telegraphy. Amongst many other influential persons who have agreed to act are:—Viscount Peel, Lord Kelvin, Lord Selborne, the Lord Chief Justice, Mr. Joseph Chamberlain, Sir Richard Webster, Lord George Hamilton, Sir Juland Danvers, Sir Samuel Canning, Sir Eyre Shaw, Sir John Robinson, Admiral Sir Henry J. C. D. Hay, Admiral Sir Anthony Hoskins, Mr. Hubert Herkomer, Mr. Herbert de Reuter, Mr. J. C. Lamb, Mr. W. H. Preece, Dr. John Hopkinson (President of the Institution of Electrical Engineers), Dr. Alexander Muirhead, Mr. Alexander Siemens, and Mr. W. S. Silver. An executive will no doubt be formed from the larger Committee, and the *Electrician* makes a suggestion for their consideration. The introduction and extension of telegraphy are almost exactly coincidental with Her Majesty's reign—the magnetic needle telegraph having been patented by Cooke and Wheatstone on June 12, 1837, and the first telegraph line from Paddington to West Drayton being constructed in 1838–9. The suggestion of our contemporary is that the memorial in question should be inaugurated at the time of the celebration of the sixtieth anniversary of the Queen's reign, on or about June 20 next.

THE fourth meeting of the International Congress of Hydrology, Climatology, and Geology will be held at Clermont-Ferrand, Puy de Dôme, from September 28 to October 4.

IT is announced in *Science* that, if certain conditions are fulfilled by the City of Chicago, the Field Columbian Museum is to receive two million dollars as an endowment fund from Marshall Field, the founder of the Institute.

THE death is announced of Dr. H. E. Beyrich, Professor of Geology and Palæontology, at Berlin.

WE are sorry to see the announcement of the death of Prof. H. A. Newton, of Yale College, whose work in pure mathematics and mathematical astronomy is well known to men of science.

THE list of new Fellows elected by the Reale Accademia dei Lincei of Rome, with their special subjects of study, is as follows:—Ordinary Fellow, Giovanni Briosi (Botany); Corresponding Fellow, Giacinto Morera (Mechanics); Foreign Fellows, Carl Neumann and Hugo Gyldén (Mechanics), Ludwig Boltzmann and Alfred Cornu (Physics).

THE *British Medical Journal* states that the members of the Liverpool Medical Institution have invited Sir Joseph Lister, President-Elect of the British Association, to a banquet to be given in his honour on September 19. The banquet will take place in the Philharmonic Hall, in which the dinner of the British Medical. Association was held on the occasion of the meeting in Liverpool in 1882. The Lord Mayor of Liverpool (the Right Hon. the Earl of Derby) will also be the guest of the Institution, and upwards of one hundred of the more distinguished members of the British Association have been invited to be present. The Blue Hungarian Band has been engaged for the evening, and no effort is being spared by the Dinner Committee to make the festival worthy of the guests, the British Association, and the Medical Institution.

As announced on July 23, the autumn meeting of the Iron and Steel Institute will commence at Bilbao, on Monday, August 31. The detailed programme has now been distributed, from which it appears that the following papers have been offered for reading:—On the Spanish iron industry, by Don Pablo de Alzola; on the estimation of sulphur in iron ores, by R. W. Atkinson and A. J. Atkinson; on the present position of the iron ore industries of Biscay and Santander, by William Gill; on a new water-cooled hot-blast valve, by William Colquhoun; on the manganese ore deposits of Northern Spain, by Jeremiah Head; on the missing carbon in steel, by T. W. Hogg; a note on the presence of fixed nitrogen in steel, by F. W. Harbord and T. Twynam; further notes on the Walrand process, by G. J. Snelus, F.R.S.; on the roasting of iron ores with a view to their magnetic concentration, by Prof. H. Wedding.

WE regret to notice the report that Herr Lilienthal, whose experiments in artificial flight have on several occasions been described in these columns, has been accidentally killed. According to a Central News telegram, he made an experimental journey on August 11, starting from Gömberg, in the province of Brandenburg. He had flown along safely for over two hundred yards, when a gust of wind suddenly caught and carried him upwards, causing him to lose control over his wings, with the result that he fell to the ground, broke his spine, and died soon afterwards. Herr Lilienthal was reported some time ago to have met with a fatal accident, but happily the news then proved to be incorrect. There does not, however, seem to be any grounds for doubting that he has now actually met his death while carrying out one of his intrepid experiments which have been of such assistance in developing the knowledge of the conditions of flight. It is worth remark that Mr. S. E. Peal, in a letter which we published on August 6, prophesied the probability of the occurrence of an accident such as that which has just ended fatally. He said: "Herr Lilienthal is probably on the right trail. I see he desires to turn and meet the breeze; but in this movement, I fancy the upper central aëroplane—so high above the centre of gravity—will turn him over in a strong wind." Unfortunately the suggested accident has happened, and has deprived science of an enthusiastic experimenter in aërial navigation.

A CORRESPONDENT at Johannesburg has sent us a report, from the Johannesburg *Star*, of some amusing speeches recently made in the Volksraad on the subject of rain-making experiments. It would be a pity to let the richness of the utterances of the members of the Raad be the cause of merely local merriment, so we subjoin the report, trusting that sacrilegious meteorologists will give it their consideration. The report is as follows: "The debate on the memorials from Krugersdorp, requesting the Raad to pass an Act to prevent charges of dynamite being fired into the clouds for rain, was continued. Mr. A. D. Wolmarans spoke in favour of his proposal, and denounced the action of certain persons at Johannesburg as invoking the wrath of God. Mr. Birkenstock said there was nothing irreligious or sacrilegious in these experiments; they were purely scientific experiments. When lightning-conductors were first invented, the same objections were raised against their use. This was not a subject for the Raad to deal with, and he moved as an amendment that the Report of the Memorial Committee to decline to interfere be adopted. The Chairman said it was a monstrous thing to shoot into the clouds; it was nothing less than defiance of the Almighty; it should be made a criminal offence. Mr. Labuschagne was of the opinion that the offenders should be imprisoned. After a further discussion it was resolved, by fifteen to ten votes, to instruct the Government to draft a law to prevent such things happening in future, and submit it this session."

THE Committee of the British Association on Zoological Bibliography and Publication desire to draw attention to the following statement:—It is the general opinion of scientific workers, with which the Committee cordially agrees, (1) that each part of a serial publication should have the date of actual publication, as near as may be, printed on the wrapper, and, when possible, on the last sheet sent to press. (2) That authors' separate copies should be issued with the original pagination and plate-numbers clearly indicated on each page and plate, and with a reference to the original place of publication. (3) That authors' separate copies should not be distributed privately before the paper has been published in the regular manner. The Committee, however, observes that these customs are by no means universal, and asks that they shall be more generally put into force. The Committee further asks for co-operation in the following matter. There are certain rules of conduct upon which the best workers are agreed, but which it is impossible to enforce, and to which it is difficult to convert the mass of writers. These are: (4) That it is desirable to express the subject of one's paper in its title, while keeping the title as concise as possible. (5) That new species should be properly diagnosed and figured when possible. (6) That new names should not be proposed in irrelevant foot-notes, or anonymous paragraphs. (7) That references to previous publications should be made fully and correctly, if possible in accordance with one of the recognised sets of rules for quotation, such as that recently adopted by the French Zoological Society. The Committee points out that these and similar matters are wholly within the control of editors (*rédaction*) and publishing committees, and any assistance in putting them into effect will be valued, not merely by the Committee, but, it is believed, by zoologists in general. Any remarks on the above matters may be addressed to Mr. F. A. Bather, Secretary of the Committee, at the Natural History Museum, Cromwell Road, London, S.W.

AN account of experiments, conducted by G. W. and E. G. Peckham, for testing (1) the range of vision and (2) the colour-sense of spiders, published in a late volume of the *Transactions* of the Wisconsin Academy, is given in the *American Naturalist*. The evidence offered by the authors is based upon a study of twenty species of Attidæ. This study extended over eight successive summers, during which notes were made of many hundreds of observations. The movements and attitudes of the spiders of the group chosen are wonderfully vivid and expressive. The males, in the mating season, throw themselves into one position when they catch sight of a female, and into quite another at the appearance of another male. This power of expression through different attitudes and movements was of great assistance in determining not only its range of sight, but also its power of distinct vision. The results of these experiments are summed up as follows:—"The Attidæ see their prey (which consists of small insects) when it is motionless, at the distance of five inches; they see insects in motion at much greater distances; they see each other distinctly up to at least twelve inches. The observations on blinded spiders, and the numerous instances in which spiders were close together, and yet out of sight of each other, showing that they were unconscious of each other's presence, render any other explanation of their action unsatisfactory. Sight guides them, not smell."

WE learn from *Science* that the U.S. Weather Bureau has issued what it calls a "souvenir" map of the St. Louis tornado of May 27. On one side there is a map showing the weather conditions over the United States on the evening of that day, with the tornado districts indicated by red crosses, and with a brief descriptive text beneath. On the reverse side is an explanation of the wind, weather, and temperature signals of the Bureau.

THE Pilot Chart of the North Atlantic Ocean for the month of August shows the probable routes followed by eighty-two bottle-papers thrown from vessels and returned to the U.S. Hydrographic Office between December 1, 1895, and June 1, 1896. Some of the individual drifts are very noteworthy, but the general course of the bottles clearly illustrates the two main features of the general surface circulation of the waters of the North Atlantic: (1) a vast but gentle eddy extending from the equator to the parallel of 48° N., and completely enclosing that portion of the ocean lying between the trades and the anti-trades, in which the currents are feeble in force and variable in direction; and (2) the so-called extension of the Gulf Stream, which proceeds north-eastward and skirts the shores of Iceland on the one hand, and Scotland and Norway on the other. The principal meteorological feature during July was the large areas of fog reported. Several westward-bound vessels met the fog near 25° W., and, with the exception of short intervals, did not have clear weather again till reaching the American coast.

REFERRING to M. Marmier's paper on the action of currents of high frequency on microbic poisons (noticed in NATURE for July 30), Dr. d'Arsonval writes to the *Société Française de Physique* pointing out, in the first place, that he has succeeded in attenuating poisons when frozen, and, in the second place, that he has destroyed the virulence of the venom of the cobra snake by means of currents of high frequency at a temperature not exceeding 40°, although, according to MM. Phisalix and Bertrand, this venom does not ordinarily lose its virulence till it has been heated to 150° in sealed tubes. Dr. d'Arsonval has been led to the conclusion that the action is not due to any heating effects, but is rather of an electrolytic nature. It is not here a matter of ordinary electrolysis with liberation of chemical constituents in the neighbourhood of the electrodes, but rather a series of alternating decompositions and recombinations following each other in rapid succession from molecule to molecule without giving rise to any free products.

THE goats of Anatolia seem to be remarkable for their susceptibility to a particular form of pneumonia which, although in some respects resembling the pleuro-pneumonia to which calves are addicted, is yet quite distinct in its microbic origin. M. Nicole, formerly assistant at the Pasteur Institute in Paris, and now director of the Imperial Bacteriological Institute in Constantinople, has made a careful study of this disease, in conjunction with one of his assistants, Rêfik-Bey. Constantly associated with the disease the authors have found a bacillococcus which, as its name indicates, is polymorphic in appearance, and might by some be regarded as belonging to a group of micro-organisms known under the collective title of the "bacteria of hæmorrhagic septicæmia," of which the fowl-cholera microbe is usually taken as the type. This group owes its origin to a hypothesis of MM. Nocarde and Leclainche, who regard the various organisms associated with hæmorrhagic septicæmia as mere variations from one parent form, the ovoid bacterium. This hypothesis, although attractive, requires further experimental confirmation before it can be unhesitatingly accepted; and M. Nicole considers that he has shown by his investigations that the organism which he has discovered to be the pathological agent in this pneumonia affection of Anatolian goats, is entirely distinct from that associated with the closely-allied pneumonic disease to which calves are subject.

A GREAT deal has been written about the difficulties surrounding the production of diphtheria toxines of efficient strength in a reasonable space of time. Some investigators have stated that an abundant supply of air is essential in the culture flasks, and specially constructed vessels admitting a current of air have been devised; others, again, assert that meat which has almost commenced to putrify is far more effective than fresh meat. M. Nicole, however, now tells us, in a recent number of the *Annales de l'Institut Pasteur*, that he can procure a powerful toxine in the simplest and briefest possible manner by employing the juice of beef only a few hours after it has been killed, with addition of peptone and salt, the whole being brought to the boiling-point, then filtered, rendered strongly alkaline, and heated for ten minutes at 120° C. After being again filtered, it is distributed in any sort of vessel which may be to hand, and sterilised by being subjected for a quarter of an hour to a temperature of 115° C. The diphtheria microbe is introduced, and the cultures are kept for five days at 37° C. when a toxine of high toxic quality is ready for use. This simple process ought to recommend itself to all who have the preparation of diphtheria toxines to superintend, for M. Nicole tells us that the results he has obtained have never failed, but, on the contrary, have been absolutely constant.

A LETTER from Messrs. P. and F. Sarasin to the Freiherr von Richthofen, announcing their return from an exploration of the south-east arm of Celebes, is published in the *Verhandlungen der Gesellschaft für Erdkunde zu Berlin*. The explorers report the examination of two lakes hitherto almost unknown to Europeans, the Lakes Matanna and Towuti. These lakes lie in an S-shaped depression between two ranges of mountains. Lake Matanna is of great depth, a sounding in the middle giving 480 metres without bottom. Remains of a prehistoric village built on piles, and now submerged, were discovered, many of the bronze and pottery articles found being very similar to those obtained in such villages in Europe. The surface of Lake Matanna is about 400 metres above sea-level, that of Lake Towuti about 350 metres.

PROF. DR. KARL FUTTERER contributes to the *Verhandlungen der Gesellschaft für Erdkunde zu Berlin* an extremely interesting paper containing a detailed comparison of the Ural and Caucasus Mountains. Discussing the similar origin of the two ranges, and the similarity of conditions affecting the Caucasus and the southern Urals, the various progressive stages of erosive action are carefully traced, and the results taken to illustrate a number of important points in the new science of geomorphology, especially in connection with such examples as the Alleghany Mountains, and the extinct range known to geologists as the "Central German Alps," which now forms the Thuringian and Black Forests, and the Harz.

The Geodynamic Section of the Meteorological Observatory of Constantinople has just completed the publication of its first year's work, and in the last monthly *Bulletin* (for December 1895) the Director, Dr. Agamennone, summarises the results. The area studied is not confined to the Ottoman Empire, but includes all the countries bordering the eastern end of the Mediterranean. Nevertheless, out of 753 shocks recorded in the *Bulletins* (an average of more than two per day), 400 belong to Turkey; while 236 occurred in Greece, and 55 in Bulgaria. Of the Greek earthquakes, more than two-thirds were felt in the island of Zante. From Persia, the Caucasus, and the region beyond the Caspian Sea, the reports are few in number, but this is probably owing to the want of observers. The slight shocks of course greatly predominate, amounting to 519; 225 were strong, or very strong, and nine disastrous. Most of the records are very brief, but more detailed accounts are given of four earthquakes—those of the Caspian Sea on July 9, the Adriatic Sea on August 9, Pergama on November 13-14, and Salonica on December 2. The value of Dr. Agamennone's work will be evident when we compare this ample chronicle with the list of 49 shocks in the Ottoman Empire during the previous year.

The difficulty of recognising the direction from which a sound proceeds is a well-known obstacle to the full utilisation of acoustic signals at sea. It often happens that a gun signal, or especially a steam whistle, is supposed by one of the watch to be on the port side, while another hears it to starboard. M. E. Hardy, in *La Nature*, describes an apparatus which should prove effective for determining the direction of the sound waves. Two microphones are placed on board at as large a distance apart as possible, say 100 yards. Each of the microphones is connected with a telephone. The observer holds the forward telephone to his right ear, and the stern telephone to his left. Then, when a signal is given by a vessel straight ahead, he will hear it first in his right ear and then in his left, and the interval will be that required by the sound wave to travel from one microphone to the other. In the case supposed, the interval will be about one-third of a second. When the strange vessel is just abeam, the sounds will strike the microphones at the same instant, and the observer will hear them as coincident. When it is just astern, the left ear will be the first to hear the signal. This method, while capable of fixing the angle between the keel of the vessel and the direction of the stranger, does not decide the port-or-starboard question. This might be done by a similar auxiliary apparatus amidships. Another method described by the same author is based upon the interference of sound waves, the sound being received by a tube dividing into two branches whose ends are placed at a distance apart equal to half the length of the sound wave, and are attached to the ends of a bar capable of rotating in a horizontal plane. When this bar points in the direction whence the wave proceeds, and only then, will the sound heard through the tube vanish by interference. But the wave may be proceeding along the bar either forwards or backwards, so that here again we have an ambiguity. But it must be borne in mind that the choice between two exactly opposite directions is comparatively easy. Considering the differences of pitch of the various bells, whistles, and fog-horns in use, we should prefer the first method. But the sound rays rarely proceed in straight lines from the source, and there are many objective difficulties besides the subjective one mentioned.

In the May number of the *Records* of the Indian N.W. Geological Survey, Dr. W. T. Blanford sums up the results of recent investigations on the ancient geography of Gondwána-land, the great southern continent of which Australia, peninsular India, Southern Africa and South America are the now isolated remnants. He points out how, one by one, each of these great southern land-masses has been found to contain remains of the peculiar Gondwána flora so different from the contemporaneous (Carboniferous and early Mesozoic) floras of the northern hemisphere, and how in each case a peculiar boulder-bed, accompanied by unquestionable evidence of its glacial origin, has been found associated with them. Recent discoveries in South America have completed the chain of resemblance, and show the great extent of the Gondwána continent. At the same time, if the South American boulder-bed be as truly glacial as that of the other areas, any attempt to explain the occurrence of this glaciation within the Tropics by a shifting of the earth's axis must be finally abandoned. It does not necessarily follow that an unbroken continental tract extended at one and the same time from South America through Africa and India to Australia, but the whole region must at least have been mainly land, at a time when the Pacific Ocean was already as important a terrestrial feature as it is now. This continental mass, too, with its peculiar flora, must have been separated from the northern lands, on which the *Lepidodendron* and *Sigillaria* of our coal-measures flourished, by some barrier, probably the Tethyan Ocean of Suess, of which our present Mediterranean and Caribbean seas are the shrunken remnants. Two recently recorded facts of hydrography are mentioned by Dr. Blanford, as throwing an interesting side-light on the difference now existing between the ancient basin of the Pacific and the modern oceans which occupy part of the site of Gondwána-land. The first is the much slower rate at which the Krakatoa wave of 1883 was propagated through the shallower waters of the South Atlantic than through the deep Pacific. The other is the warm temperature of the bottom-waters of the North-west Indian Ocean, which indicates that they (like those of the Mediterranean) are isolated by some barrier from the cold bottom-currents, and such a barrier must run in precisely the direction required for the ancient connection of India and Southern Africa. Thus evidence from all directions converges to indicate the fundamental difference between Atlantic and Pacific Oceans, and in this, bound up as it is with the history of Gondwana-land, it may well be that the key to many a geological puzzle will yet be found.

The second and concluding part of Mr. C. D. Sherborn's *Index to the Genera and Species of the Foraminifera* (Non—Z) has been published by the Smithsonian Institution. It shows signs of the most scrupulous care in preparation, and should prove a boon to future workers on the Foraminifera.

The Jubilee of the Chemical Society of London was celebrated in 1891, and it formed the subject of articles in these columns at the time. A record of the proceedings, together with an account of the history and development of the Society, has now been published in a souvenir volume. Translations are given of the addresses sent by foreign societies, and of the speeches made by the foreign delegates. A translation is also given of M. Dumas' Faraday lecture, as well as abstracts of the five other Faraday lectures. The Society boasts of being the first which was formed solely for the study of chemistry, and success has attended it from its foundation. It soon became a centre of the chemical life of this country, and by its publications it has played the chief part in the advancement of chemistry. The volume just published will make Fellows of the Society proud of their Fellowship, and will arouse a spirit of emulation among chemists in many parts of the world.

STUDENTS of meteorology will be glad to know that three important essays on Australian weather have, by the generosity of the Hon. Ralph Abercromby, been brought together and published in book form. The first essay, on "Moving Anticyclones in the Southern Hemisphere," by Mr. H. C. Russell, F.R.S., was originally read before the Royal Meteorological Society, and published in the Society's *Journal*. The leading fact brought out in this paper is that Australian weather south of lat. 20° S. is the product of a series of rapidly moving anticyclones, which follow one another with remarkable regularity, and are the great controlling force in determining local weather. These anticyclones travel eastward at the average rate of four hundred miles per day, and they do so with such regularity that the prospect is held out of weather predictions being made some weeks in advance, or even for longer periods. The second essay in the volume is the one, by Mr. H. A. Hunt, on "Southerly Bursters," which won the prize offered by the Hon. Ralph Abercromby. This essay was noted in NATURE in January 1895 (vol. li. p. 230). The third essay, which is also by Mr. Hunt, has for its subject "Types of Australian Weather." This discussion throws much new light upon the source of the greater part of Australian rain, and at the same time forms an important contribution to the study of weather in the southern hemisphere generally. The volume containing these essays is published by Mr. F. W. White, Sydney.

THE additions to the Zoological Society's Gardens during the past week include four Malabar Squirrels (*Sciurus maximus*) from Southern India, presented by Mr. W. J. Stillman; two Sclater's Curassows (*Crax sclateri*) from Minas Geraes (Brazil), presented by Mr. E. Sumead; a Temminck's Stint (*Tringa temmincki*), British, presented by Mr. E. C. Sprawson; a Golden Eagle (*Aquila chrysætus*) from Spain, presented by Mr. F. Leathly Holt; three Common Blue-birds (*Sialia wilsonii*) from North America, presented by Mr. A. T. Binny; two Stone Curlews (*Ædicnemus scolopax*), British, presented by Mr. W. J. Kidman; two Common Blue-birds (*Sialia wilsonii*) from North America, presented by Mr. Percy Cockshut; three Common Adders (*Vipera berus*), British, presented by Mr. A. Old; three Peruvian Snakes (*Tachymenis peruviana*) from Peru, presented by Mr. A. H. Jamrach; a White-browed Amazon (*Chrysotis albifrons*) from Honduras, purchased; a Wapiti Deer (*Cervus canadensis*, ♀), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

LUNAR PHOTOGRAPHS.—Prof. Weinek, whose artistic skill in the enlargement of lunar photographs cannot but be admired, and who has co operated with the staff of the Lick Observatory in reproducing from their negatives the more interesting features of the moon, has recently made a further contribution to the Vienna Academy of fifteen enlargements of certain details on the lunar surface, as seen at the third quarter. Also, Aristarchus and Herodotus have been drawn with the shadows thrown on the western side as a companion picture to an earlier enlargement in which the shadows are thrown to the east. Dr. Weinek now takes the opportunity of calling attention to the fact that, in many instances, his drawings, indicating the existence of minute detail, have been confirmed by Dr. Gaudibert from optical examination of the moon itself. This remark refers to drawings from original negatives taken both at the Lick and Paris Observatories. The differences between the photographic reproductions and Schmidt's map are admitted, and according to the description furnished by Dr. Gaudibert, it is a little difficult to explain some of the omissions from this well-known authority.

DISTRIBUTION OF BINARY-STAR ORBITS.—Miss Everett gives in *Monthly Notices*, June 1896, pp. 462-466, the results of an attempt to discover if the planes of the orbits of binary stars have any relation to the plane of the Milky Way. To do this, the most accurate values of the elements of fifty-five orbits were taken, and from these the galactic longitudes and latitudes of the poles of the orbits were calculated and tabulated. Gould's value of the position of the galactic northern pole was assumed, viz. R.A. 12h. 42m. 4s. (190° 31′), Decl. +27° 16′ (Epoch 1890). This gives the obliquity of the central line of the Galaxy as 62° 7′, and the position of the ascending node is at R.A. = 18h. 42m. (280° 31′), from which the galactic longitudes are reckoned. On examining the tables, it appears that equal surface zones contain nearly similar numbers of orbit poles, and it is concluded that there is no decided tendency on the part of the poles of the orbits to favour any special region of the celestial sphere, and hence that the planes of the orbits cannot be regarded as having any definite relation to the mean plane of the Galaxy.

COMET 1890 VII.—The orbit of this comet, which was first seen by Dr. Spitaler of Vienna, while searching for one recently discovered by M. Zona of Palermo, has been submitted to a thorough examination by the original discoverer, with the result that the period of six and half years has been confirmed. Consequently, its return to perihelion may be looked for next spring, and Dr. Spitaler has prepared ephemerides to facilitate its search. The most favourable time for observation will be next month, when the comet will be in opposition, but the theoretical brilliancy will be only about one-fourth that possessed at the time of discovery in 1890. The considerable southern declination of the comet will render its detection in these latitudes still more difficult. The next return in 1903 will be still more unfavourable, and though 1909 may offer good chances for observation, the error of position will be larger. Dr. Spitaler thinks that the ephemeris he has prepared for this return is trustworthy to about five minutes of R.A. and forty minutes of Declination.

PHOTOGRAPHY OF SOLAR CORONA.—Count de la Baume Pluvinel has recently discussed the conditions necessary for successfully obtaining photographs of the corona (*Bulletin de la Soc. Ast. de France*, July 1896). The difficulty of the problem lies in the varying intensity of the several parts of the corona, the delicate details being lost in long exposures on the inner region, while in short exposures the outer corona is almost absent. During the eclipse of April 1893, the author attempted to determine the best value of the "photographic action" necessary for depicting the coronal structure without allowing the light from the surrounding sky to produce any deteriorating effect. The term "photographic action" is defined as being proportional to the product of the intensity of the image and the duration of exposure, and is accepted as being constant within certain limits. For this purpose he employed a compound camera having nine object-glasses, with apertures varying from 5 mm. to 155 mm., and average focal length of 1·5 metres. The time of exposure for all was 230 secs., and consequently the photographic action had values varying from 0·24 to 250. From the various photographs obtained he concluded that, for that particular climate (Joal) a photographic action of about 4 was best. From other photographs taken in Brazil, he recommends a value of 10 to be used in future eclipses, this value to be diminished or augmented as the sky light is greater or less than that in 1893. The above law of photographic action ceases to hold beyond certain limits; as the intensity of the light decreases, the time of exposure must be enormously increased, and this fact has led the author to suggest a method of photographing the corona without an eclipse. It involves the design of a telescope with such a ratio between aperture and focal length that the sky illumination will be too feeble to affect the plate, while the slightly greater intensity of the corona will allow of its being photographed with a long exposure.

NANSEN'S POLAR EXPEDITION.

DR. NANSEN arrived at Vardö, Norway, on Thursday, August 13, after an absence of three years. A Reuter telegram says that he left the *Fram* with a companion on March 14, 1895, in lat. 84° N., in order to push further north into the Polar Sea than the *Fram* could penetrate. The expedition accomplished its object in traversing the Polar Sea to a point north of the New Siberia islands. The most northerly